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ABSTRACT

A writing across the curriculum project at Trumbull High School (Connecticut) is based on a cross section of English, science, and career education courses: advanced composition, science fiction, physics, chemistry, biology, and vocational agriculture. It focuses on writing as a mode of learning; extending and refining the students' processes of thinking, writing, and learning; and flexible team cooperation in the planning and execution of the project. The grasshopper can be examined and written about from the perspectives of the six different courses. In composition class, writing about science will serve as a lead-in to writing for different purposes and to writing across the curriculum. Five of the seven project proposals accepted for the fourth launch of the space shuttle "Columbia" involved students from Trumbull High, and these proposals could serve as models of persuasive discourse. The logistics of the project can be handled through scheduling, keeping track of cross-registered students, and dissemination of information through handouts. How to apportion credit for cross-class work and calendar synchronization are other considerations. Still, what must remain central to this project is the focus on the students. (JL)

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Grasshopping across the Curriculum

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July, 1982

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I. Acknowledgements

The people at Sacred Heart University, Bridgeport, CT got us started:

Michelle Loris, coordinator of the workshop skills center, who asked for a project proposal -- tomorrow

Dr. Donald Brodeur, Dean of Humanities

Dr. Charles Eby, director of faculty development

The people at Trumbull High School have been professional and delightful:

Paul Cervoni, chairman of English, who suggested me for NEH

Donna Anderson, who said "grasshopper"

Barbara Kmetz, who said "launch"

Richard Parent, who said "aerodynamics"

Christopher Allen, who said "learning by doing"

Edward Gill, who said a lot

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Edward Lovely, Robert Roche, John Wetzel, Leonard Germano, John Roche, Fred Dirga, Susan Tischler, Helen Sabottke, Catherine Petrelli

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Elaine Maimon, Peggy Horodowich, Gerald Belcher, Barry O'Connor; Barbara Nodine and Gail Hearn

A special person is Marie Lawrence.

My bright colleagues at the NEH Institute have kept a sense of humor, especially Marian "Bunny" Calabrese, who brought me a mirror.

II. Information to orient the audience

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Trumbull is a town which sits ten miles north of Bridgeport, CT. It is described by real estate people as suburban residential. The population of 35,000 is described in town reports as mixed lower to upper middle class. The Trumbull High School profile describes the population as interested in and contributory to the local school system. It is.

At Trumbull High School, this past year of 1981-82, the enrollment in grades 10, 11, 12 totaled 1,776. Personnel consists of principal, three housemasters, 109 classroom teachers, seven guidance counselors, four media specialists, one technician. The Superintendent's report to the staff in June, 1982 stated that "Trumbull's students continued to do well largely because of the efforts of an excellent teaching staff." He's right.

The project proposed in this paper, under the sponsorship of the National Endowment for the Humanities, is a collaborative venture between Trumbull High School and Sacred Heart University, which is in Bridgeport, CT.

1. Bridgeport
2. Trumbull
3. Stratford
4. Fairfield
5. Shelton
6. Easton
7. Redding
8. Monroe
9. Bethel

Vocational Agriculture at Trumbull High School serves these towns and the city of Bridgeport

III. Rationale

The time is here for writing across the curriculum; and, as Barry Beyer says: "...; and who knows better why one should read or write, the background needed to read or write, and the special vocabulary and skills needed than a teacher of the content in which these processes are to be used?" (Barry Beyer, Back-to-Basics in Social Studies. Boulder, Colorado: Social Science Education Consortium, Inc., 1977. p. 18)

Those of my colleagues with whom I've talked have shown both enthusiasm and a willingness to take part in this cooperative venture. They have contributed their knowledge, their ideas, and questions. Their request has been, "Keep me informed. Let me know what I can do."

Also from our conversation has come my discovery that students have, for years, talked across the curriculum, with teachers, peers, and parents as audience.

(To the Physics teacher): "In Science Fiction we talked about heavy gravity."

(To the Science Fiction teacher): "In Biology we talked about the elasticity on ponds."

(To the Comp teacher): "In Vo-Ag we talked about differences in soil--and say 'soil', not 'dirt'".

My colleagues speculate that the students want to let us know that their minds are busy making associations.

IV. The problem

This project is based on a cross-section of courses in the disciplines of English, Science, and Career Education. One focus is on writing as a mode of learning in Advanced Composition, Science Fiction, Physics, Chemistry, Biology, and Vocational Agriculture. Another focus is on writing as a clarifier of thinking. As students write to suit the purposes of each of the six courses listed above, they will become aware of the changes in their styles and vocabulary. They will also become aware of effect of audience on their writing. They will notice the similarities and differences among the six courses.

We are aware of the fact that results will be as varied as the students themselves, but we expect to extend and to refine their processes of thinking and writing and learning.

A third focus is on team cooperation in the planning of, the implementation of, and the close look at this writing across the curriculum. We plan on flexibility as the key concept as the team of teachers and our varied students interact.

V. Relating the courses to the grasshopper

When I phoned Donna Anderson to chat about what happens in her Biology classes, she said that her students write what they observe.

"Like butterflies?"

"Make it grasshoppers," she said. And I pounced on the word as a basis for the project.

In Biology, Donna's students write lab reports. They also write as they observe through naked eye, microscope, or magnifying glass, the grasshopper. They record multi-faceted eye, antennae formed to look like a folding telescope, legs like spurs. They note lateral jaws, big lip, an abdominal section that moves like bellows, an external skeleton. Donna asks questions that encourage inductive/deductive reasoning such as: "Why might a grasshopper see us upside down and inside out?"

In Physics, says Barbara Kmetz, a concept is usually stated mathematically. Only when the math gets unvieldy do physicists use linguistics. However, using the textbook, Barbara poses detail questions and also poses "What do you think about...?" questions, on the premise that Physics has more questions than answers. One question can be, "How might a grasshopper behave in and adapt to weightlessness?" Students can read about the science project of Todd Nelson of Minnesota, whose container of insects was included in the third space voyage of Columbia in March, 1982. Was a grasshopper included? Information can be gotten from the public relations department of NASA.

Also in Physics, says Richard Parent, the writing is terse,

straightforward, with a lack of nuance. The writing seems "different" because the vocabulary is specialized and because the unique language of math gives meaning to a mark like = , which acts like a verb.

Richard suggests the question, "How would an aerodynamics engineer view the grasshopper's design?" For his Chemistry classes he suggests a study of the grasshopper through the concept of energy, of refueling, of metabolism. Richard's students deal with problems that involve attempts to explain, to clarify. However, the abstract concepts are not easily portrayed in terms of the concrete, an example being the 3-D spatial relationship. This needs imagination.

In Vocational Agriculture, says Christopher Allen, the subject matter is concrete and straightforward. There is little of the abstract. It's learning by doing. The students raise beef cows; raise white potatoes, sweet potatoes; raise quail; plant vegetable gardens; raise pigs; begin evergreen nurseries from cuttings. Chris has students write out their project plans so that they will think them through. He finds a wide range of reading/writing ability among the students, some of whom are in Developmental English 11 and 12.

Edward Gill agrees with Chris that Vo-Ag is hands-on learning, with the classroom used for A-V and for demonstration.

Both Ed and Chris say that, although the grasshopper is not harmful in Connecticut, and although it does serve as food for birds, other insects, and cats, its best function for the purpose of correlating writing and Vo-Ag is as a transition to the 96% of the

insects said to be either harmless or actively beneficial. Specifically, they name the "cousin" of the grasshopper, the natural pesticide, the classic helper--the praying mantis. Ed's students have found mantis pods clinging to golden rod on the old Tomek farm near Trumbull High, have hatched them, have tried feeding them. The students have seen that, newly hatched, the praying mantes look "like toasted marshmallows".

Ed comments that, although his students do little writing, this could change because:

The present Vo-Ag program, located at both a Junior High and at Trumbull High, with a greenhouse at each place, will be consolidated at the high school. Federal funding has already been approved. There will be two and one-half added classrooms, two henhouses, two more greenhouses, a library. With a changed program, possibly beginning this January, we have an opportunity to team teach.

Ed asks how he can challenge the Seniors, who could be almost independent, almost unsupervised, to experiment in the greenhouses or outside of them and to do research on such topics as The Insects Are Winning. Ed also asks: "Which is more important--subject matter or writing techniques? content or sentence structure? What can be done for students who are unable to cope with reading/writing on a more advanced level? What should be the priorities? How should these problems be solved?

In Science Fiction, I assign specific short stories which, over the years, have excited good, speculative talk among the students

and have been recommended by them. We mention the multi-cell eyes of the aliens in "If" by Harry Harrison. We present evidence from "The Yellow Pill" by Rog Phillips and from Physics to support our claims for the chosen "reality" of either Elton or Boucek. Students write about the parallels of our space breakthrough and the breakthrough by the little people through the elastic surface of the pond in "Surface Tension" by James Blish. They read handouts about Science Fiction and apply certain passages to stories already read. They chart the stories according to which sciences are basic to the story, using phrases as supportive evidence.

Guest lectures by the Science teachers may be effective in conjunction with certain stories.

In Advanced Composition, I concentrate on exposition, argumentation, and literary analysis. Exposition deals with clarification, analysis, explanation of relationships, definition, comparison and contrast, illustration, causal analysis.

In preparation for writing, the students review transitional devices, both direct and indirect, as presented by Phillip Burnham and Richard Lederer in Theme and Paragraph (Wellesley Hills, MA: Independent School Press, 1976; p. 101), and then locate the devices in magazine articles.

Initially, the grasshopper will be the subject for short writings in the above expository areas:

clarification: All grasshoppers are not, like the locust, engines of destruction.

explanation of relationships: The middle pair of legs does the most walking.

definition: Explain "hopping."

comparison/contrast: the hopping of a grasshopper and a bird

illustration: The grasshopper has the beautiful symmetry of three budy regions.

causal analysis: The grasshopper is an expert high jumper.

Students may change these topics, since some will say:

"My grandfather raises bees."

"The yellow jackets got me yesterday."

"I found a huge spider web." (Here, we bend for arachnids.)

"I hate bugs."

The question, "Why are we doing Science in a Comp class?" will serve as lead-in to writing for different purposes and to writing across the curriculum discussions.

In Argumentation we deal with inductive/deductive reasoning. Because students on the high school level have difficulty with analytical reasoning, I plan to forego the grasshopper in this segment of Composition and to continue my use of articles on the abominable snowman and of Ray Bradbury's short story, "The Flying Machine," raising the question of whether or not the Emperor was justified in executing the inventor in order to save the Empire from future attack. It is possible that some student may wish to pose a hypothesis concerning insects, in which case I will mention Ed Gill's comments that "all creatures on earth have had their heyday except the insects," and that "after nuclear explosions, the insects adapt most quickly."

Argumentation may be the place for talking about the seven Science projects that were accepted for the fourth launch of Columbia. Five

of the seven accepted projects involved students from Trumbull High School. It is true that the competitors wrote exposition based on a hypothesis that predicted the effect of a gravity-free environment on nickel sulphate crystals; however, it was necessary that the students persuade the vice-president of Chesebrough-Pond's of the validity of the experiment. While Pitney-Bowes lent apparatus and the University of Bridgeport lent facilities, it was Chesebrough-Pond's that did the financing. By talking with some of the project writers, Composition students will learn about persuasive writing procedures.

At this stage of my planning, I am not sure of how I will handle the poems about the grasshopper:

"The Grasshopper"
from the Greek of Anacreon,
translated by Abraham Cowley

"On the Grasshopper and the Cricket"
John Keats

"On the Grasshopper and the Cricket"
Leigh Hunt

"One Guess"
Robert Frost

"r-p-o-p-h-e-s-s-a-g-r"
e. e. cummings

"What a Burdensome Life"
K. Tsuda

The students who enjoy and understand poetry will choose to compare and contrast themes, language, form, purpose of the above poems. Others will read passages from A Lot of Insects by Frank E. Lutz, The Insects by Url Lanham, Six-Legged Science by H. E. Jaques,

Time, Grasshoppers and Crickets by Dorothy Hogner, and State Extension Bulletins. The students will study, discuss, and write imitations of the passages.

It may be effective, at this point, to form small groups for the purpose of mixing the poem people and the prose people for exchange of ideas.

VI. The Logistics

How can the team handle the crosscrossing of writing, thereby helping the students to learn versatility?

For us six teachers, the schedule for September - June, 1982-83 looks like this: (See next page.)

From this distance and from outside the non-academic nitty-gritty of school, the schedule looks promising. Possibilities immediately apparent to me are the crisscrossing of English Developmental 11 and 12 with Vo-Ag, since those students are often in both disciplines. This facilitates planning and work among students and three teachers.

Also, I must inquire in each of my classes as to who is taking more than one of the courses involved in the project. I will then send lists of these names to my colleagues. Basic to the project is my being available to students at all times. I will get the word out that students may see me during my classes (which are loose anyway, with one-to-one or small-group work) or during my free period.

At this time, I do not know what duty periods the team will have. It is possible that, for purposes of conference, some or all may be excused from duty. It is also possible that, in order to get this project off the ground, the administrators will consider as a duty period, for me, liason and dissemination of information among the group.

I see dissemination as handouts to colleagues, coordinator, and administrators concerning the ideas, suggestions, and methods that have come from this NEH Institute. Dissemination also includes

Period →	1	2	3	4	5	6	7
Blanche	Engl. Dev. 11		Engl. Dev. 12	Adv. Comp.	Adv. Comp.		Adv. Comp.
Donna	Biology	Biology			Biology		Biology
Barbara	Physics ← (F)	Lab ←	Physics (R)		Physics → (T)	Lab ←	Physics (M)
Richard	Chemistry	Chemistry Lab (M)			Chemistry	Chemistry Lab (F)	
Ed + Chris	Vo-Ag →		Vo-Ag →			Vo-Ag →	

reactions among my colleagues to the information through addenda, revision, comments, extension--all for the common good. Students will also be reactors and disseminators.

Another possibility is that some of us may be free at the same time. Also, Richard, Chris, Barbara, and I arrive early. Donna and Ed leave late. I surmise, though, that our most productive brainstorming and planning may be on the phone--which is what happened at the start of this project. This is because we fly by each other as we answer messages, drop off lists, check our mailboxes, run to the duplicators and Thermofax and media center, pick up films, track kids, track administrators. We even eat. Also, it's amazing how much time we spend talking with students and listening to students.

The students will wire us together. As I said earlier, they've been talking across the curriculum. Now they have a direction to write across the curriculum through several disciplines.

VII. Considerations

If the students do Vo-Ag assignments during my class time, will they receive credit for these in both classes?

At what point in the calendar are Donna's Bio students perusing the grasshopper?

VIII. Conclusion

The recurring theme in this paper is that this effort has the single purpose of helping the students to write better, to learn, and to think. Central to this concept of writing across the curriculum is the focus on the students.

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